

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) A system for providing out-of-band notification of service changes, comprising:
  - a cluster framework into a layered architecture, comprising:
    - an application layer comprising at least one of applications and middleware supporting the applications;
    - a database instance resource group interoperating with the application layer and comprising a database instance providing services; and
    - a monitor associated with the database instance resource group and exporting an out-of-band interface to the database instance resource group; and
  - a notification mechanism generating an UP service notification from the cluster framework upon service availability and generating a DOWN service notification from the cluster framework upon service non-availability.
2. (Original) A system according to Claim 1, further comprising:
  - a planned operation interface incorporated into the application layer; and
  - the notification mechanism generating a COMING UP service notification responsive to an instruction received through the planned operation interface and generating a GOING DOWN service notification responsive to a further instruction received through the planned operation interface.
3. (Original) A system according to Claim 1, further comprising:
  - a global services daemon interfaced to the database instance resource group; and
  - the notification mechanism generating a DOWN service notification for the services on a failed database instance; generating a COMING UP service notification from the global services daemon responsive to a recovering database instance and generating an UP service notification from the global services daemon responsive to a recovered database instance.

4. (Original) A system according to Claim 1, further comprising:  
at least one of a remote procedure call interface and an event interface provided to the  
database instance resource group.
5. (Original) A system according to Claim 1, further comprising:  
a resilient set of cluster frameworks comprising an active node and one or more standby  
nodes.
6. (Original) A system according to Claim 5, wherein the resilient cluster framework executes a  
node failover to the active node.
7. (Original) A system according to Claim 5, wherein the resilient cluster framework executes a  
node failover to one such standby node.
8. (Original) A system according to Claim 1, further comprising:  
a non-resilient set of cluster frameworks comprising an active node.
9. (Original) A system according to Claim 1, wherein the resilient cluster framework terminates  
service on a failed node responsive to a DOWN service notification.
10. (Original) A system according to Claim 1, wherein the resilient cluster framework resumes  
service on a recovered node responsive to an UP service notification.
11. (Original) A system according to Claim 1, wherein the resilient cluster framework effects a  
switchover to a standby node responsive to a COMING UP service notification.
12. (Original) A system according to Claim 1, wherein the application layer pre-connects to a  
standby node responsive to one of a COMING UP service notification and an UP service  
notification.

13. (Currently amended) A **computer-implemented** method for providing out-of-band notification of service changes, comprising:

**configuring** ~~structuring~~ a cluster framework into a **set of layers, wherein said set of**

**layers comprise:** ~~layered architecture, comprising:~~

an application layer comprising at least one of applications and middleware supporting the applications;

a database instance resource group interoperating with the application layer and comprising a database instance providing services; and

a monitor associated with the database instance resource group and exporting an out-of-band interface to the database instance resource group;

generating an UP service notification from the cluster framework upon service availability; and

generating a DOWN service notification from the cluster framework upon service non-availability.

14. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:

incorporating a planned operation interface into the application layer;

generating a COMING UP service notification responsive to an instruction received through the planned operation interface; and

generating a GOING DOWN service notification responsive to a further 6 instruction received through the planned operation interface.

15. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:

providing a global services daemon interfaced to the database instance resource group;

generating a DOWN service notification for the services on a failed database instance;

generating a COMING UP service notification from the global services daemon responsive to a recovering database instance; and

generating an UP service notification from the global services daemon responsive to a recovered database instance.

16. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:
- providing at least one of a remote procedure call interface and an event interface to the database instance resource group.
17. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:
- configuring a resilient set of cluster frameworks comprising an active node and one or more standby nodes.
18. (Currently amended) A **computer-implemented** method according to Claim 17, further comprising:
- executing a node failover to the active node.
19. (Currently amended) A **computer-implemented** method according to Claim 17, further comprising:
- executing a node failover to one such standby node.
20. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:
- configuring a non-resilient set of cluster frameworks comprising an active node.
21. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:
- terminating service on a failed node responsive to a DOWN service notification.
22. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:
- resuming service on a recovered node responsive to an UP service notification.
23. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:

effecting a switchover to a standby node responsive to a COMING UP service notification.

24. (Currently amended) A **computer-implemented** method according to Claim 13, further comprising:

pre-connecting to a standby node responsive to one of a COMING UP service notification and an UP service notification.

25. (Currently amended) A computer-readable storage medium holding ~~code~~ **instructions for causing a processor to execute** ~~for performing the~~ **computer-implemented** method according to Claim 13.

26. (Original) A system for communicating service change events in a cluster 2 framework environment, comprising:

a plurality of service change events for communication between a plurality of nodes, comprising:

an UP service change event;

a DOWN service change event;

a COMING UP service change event; and

a GOING DOWN service change event;

a remote procedure call interface from a database instance in a database stack executing on one such node; and

a notification mechanism publishing at least one such service change event from the database instance.

27. (Original) A system according to Claim 26, further comprising:

a further notification mechanism receiving the one such service change event at one or more other nodes.

28. (Original) A system according to Claim 26, further comprising:

a cluster service within the database stack.

29. (Original) A system according to Claim 26, further comprising:  
a planned interface within the database stack.
30. (Original) A system according to Claim 26, further comprising:  
a global services daemon with listener within the database stack.
31. (Original) A system according to Claim 26, further comprising:  
a cluster service processing a multiple instance failover from the one such node to one or more other nodes.
32. (Original) A system according to Claim 26, further comprising:  
a cluster service processing a single instance failover to the one such node.
33. (Original) A system according to Claim 26, further comprising:  
a cluster service processing a switchover from the one such node to one or more other nodes.
34. (Currently amended) A **computer-implemented** method for communicating service change events in a cluster framework environment, comprising:  
defining a plurality of service change events for communication between a plurality of nodes, comprising:  
an UP service change event;  
a DOWN service change event;  
a COMING UP service change event; and  
a GOING DOWN service change event;  
exporting a remote procedure call interface from a database instance in a database stack  
executing on one such node; and  
generating a notification publishing at least one such service change event from the database instance.
35. (Currently amended) A **computer-implemented** method according to Claim 34, further

comprising:

receiving the one such service change event at one or more other nodes.

36. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

providing a cluster service within the database stack.

37. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

providing a planned interface within the database stack.

38. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

providing a global services daemon with listener within the database stack.

39. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

processing a multiple instance failover from the one such node to one or more other nodes.

40. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

processing a single instance failover to the one such node.

41. (Currently amended) A **computer-implemented** method according to Claim 34, further comprising:

processing a switchover from the one such node to one or more other nodes.

42. (Currently amended) A computer-readable storage medium holding ~~code~~ **instructions** for **causing a processor to execute** performing the **computer-implemented** method according to Claim 34.

43. (Currently amended) A **computer-implemented** method for detecting a failure of a first process, the method comprising the steps of:

establishing a first connection between said first process and a second process;  
monitoring status of said first process to determine whether said first process has failed;  
and  
in response to determining that said first process has failed, notifying said second process that said first process has failed;  
wherein a second connection, that is different from said first connection, is used to notify said second process of said failure of said first process failure.

44. (Currently amended) A **computer-implemented** method according to Claim 43, wherein:

the step of establishing a first connection between said first process and a second process includes the step of establishing a first connection between an application server and a database instance;  
the step of monitoring includes the step of monitoring status of said database instance;  
and  
the step of notifying said second process that said first process has failed includes the step of causing an out-of-band break to be sent to said application server.

45. (Canceled)

46. (Canceled)